

XXIII.—*Description of a Species of Mygale, from Ionia, with its Nest.* By SYDNEY SMITH SAUNDERS, Esq.

[Read 2 September, 1839.]

*Mygale Ionica.*

THORAX subcordiformis, posticè depressus.

Oculi rotundi, anteriores quatuor lineâ ferè rectâ, intermedii vix retrorsum, jacentes; posteriores inter se remoti, duplici serie semel dispositi; anteriores duo externi majores, reliqui sex magnitudine subæquales.

Mandibulæ articulo primo magno subhemisphærico, dentibus plurimis subtùs, spinisque anticè sex (quorum tres magni) armato; unguibus simplicibus.

Pedes hirsuti, posticis longioribus, reliquis longitudine ferè æquis. Tarsi obtusi bicuspidati, anteriores quatuor spinis mobilibus armati, reliqui vix spinosi: unguis basi dentatis.

Palpi articulis extremis utrinque spinosis.

Habitat Insulis Corcyræ et Zacynthi.

Long. corp. 7—9 lin.

Differt a *Mygalis Fodiens*, *Cæmentaria*, *Carminans*, *Cellicola*, et *Ariana*(?) dictis, oculorum dispositione.

Confert hæctenus cum *M. Sicula*; sed differt eâdem pedum armaturâ, et mandibularum unguibus simplicibus.

In the *Annales de la Société Entomologique de France* (vol. ii. part 1), M. Audouin has recorded a series of observations upon the nests of certain mining spiders, and in particular upon those of *Mygale fodiens*, Walck.

During a short excursion to Zante, having noticed a number of nests differing somewhat in their construction, and belonging as it would seem to a new species (if not to the *M. Ariana*, Walck., to which I was at first inclined to refer it), I was induced to take up several for the purpose of examination, which has enabled me to lay before the Society the following details.

These nests were found close round the roots of the olive trees in a somewhat elevated situation, and were generally observed two or three together about the same tree. The soil was a sort of sandy clay, of a light ochraceous colour, very different from the "terre argileuse d'une rouge de brique," described by M. Audouin. The upper portion of the nests was also partially raised

above the surface of the ground; but this may have arisen from the washing away of the surrounding earth during the heavy autumnal rains, the more especially as from the coating of moss which showed itself in many cases upon the upper surface of the operculum, they could not have been of very recent construction.

The form and structure of this operculum were also peculiar, for, unlike those of the *Mygale fodiens*, which are represented as closely assimilated to the surface of the soil, and for the opening of which the only facility (according to M. Audouin's observations) consists in the numerous inequalities of the exterior covering of the lid, by means of which the insect is enabled to secure a sufficient hold; the opercula of those which I met with at Zante were all more or less provided with an elevation of the posterior margin directly above the hinge (as shown at fig. 9) to the extent in some instances of one third of the diameter of the lid. The object of this projection could not be mistaken, for, acting as a lever, the slightest pressure upon it would suffice to raise the operculum, and afford the readiest ingress. This elevation appears to be produced by a gradual lengthening in the direction of the hinge of the respective layers of which the lid is composed.

The readiness with which the opening of the lid is effected by this ingenious contrivance of the lever, might lead one to suppose that an extra degree of care would be displayed in regard to the means of firmly closing the same from within, in the event of outward attack. The *M. cæmentaria* and the *M. fodiens* are reported to cling to the door of their habitations for this purpose; and in the nests of the last-mentioned species, a number of minute holes have been observed around the inner side of the operculum, which M. Audouin ascribes to the purpose of enabling the occupant to secure a firm hold with its claws on such occasions. No such provision, however, is made in the case of the Zante *Mygale*. I have also in my possession the nest of another mining spider (of the species of which I am ignorant, from not having secured the occupant), where the series of holes alluded to is disposed all round, and not merely in front of the operculum on its interior surface, as minutely described by M. Audouin. This nest was from Corfu, and the construction appears in many respects to resemble that of *M. fodiens*. The length of the tube is about four inches, and its lower end is slightly oblique. The *Mygale Ionica*, however, is also met with not unfrequently at Corfu, as I am informed by my friend the Rev. Charles Kuper, a diligent Entomologist, who has been for some years resident in that island.

The hinge of the nests prepared by this species is apparently different from that of the nests which came under the observation of M. Audouin, although the same object of providing for the self-closing of the valve is effected by the web, which connects the tube with its coverlid, being in some degree extended on each side of the hinge, thus giving at the same time greater apparent width to the hinge itself, but leaving the web sufficiently loose on each side, so that, in conjunction with its elasticity, it should just admit of freely opening the valve as far as the vertical line, or thereabouts, without risk of injury.

The nests of an undescribed species of mining spider from New Granada, figured by M. Audouin in the "Annales des Sciences Naturelles," for April, 1837, appear to be furnished with a hinge somewhat upon this principle: the underside of the valve is also divested of the series of holes before alluded to; but it differs from the Ionian one in other respects. The insect in question did not accompany the nest, and was not known to M. Audouin.

The interior lining of the tube of *M. Ionica* appears, from all the nests which I have seen, to be of a less perfect consistency than that of *M. fodiens*, and divested of that circumference of macerated earth, or exterior walls of a more solid consistency than the surrounding mass, which in those of the last-mentioned species give strength to the work and facilitate the separation of the tubes from the mass in which they are imbedded. In attempting such separation, the tubes of the Zante *Mygale* invariably broke asunder, although this effect may be in some measure attributed to the excessive dryness of the earth at the time of excavation, and perhaps in part also to the circumstance of the glutinous matter, with which this description of tissue is usually provided, being dissolved and wasted, at a former period, from the action of the same causes to which I have ascribed the appearance of the nests above the surface of the soil.

The length of these tubes might be about four and five inches. Those of *Mygale cæmentaria* (as described by M. Léon Dufour, in the Annales des Sciences Physiques) are stated to be about two feet deep: those, however, of *M. carminans* (the supposed male of *cæmentaria*), are, according to the observations of the Abbé Sauvages, not more than seven inches long: while those of *M. fodiens*, in the Paris Museum, although cut off within about three inches of the surface, are supposed by M. Audouin to have been possibly of considerable length, for, in alluding to a slight obliquity observed towards their lower extremity, he says, "peut-être même se recourbaient-ils davantage en se prolongeant beau-

coup plus avant dans la terre." I am however inclined to infer, from the similarity of one of the Corfu nests already noticed, that the length of the tubes constructed by *M. fodiens* probably does not exceed those of *M. Ionica*.

Having now arrived at the lower part of the nests, it remains for me to notice a very remarkable peculiarity which presented itself in this portion of some of those which came under my observation at Zante, the extreme end within the ground being formed somewhat upon the same model as the top, that is to say, being provided with a second operculum of greatly diminished size, and opening downwards as shown at figs. 12, 13, and 14.

The only conjecture which I would hazard as to the use of the moveable process referred to, which I should mention only occurred in some nests, is, that it may possibly have answered the purpose of a drain to the bottom of the nest; for in no other way can I account for the construction of these singular portals in a situation where, to all appearance, they were destined to remain closed throughout the whole period of their existence. In any case, however problematical the advantages to be derived from this operation may at first sight appear, I feel no hesitation in affirming, that the result of further observation will convince us that the ordinary sagacity of these ingenious miners has not been at fault, or deserted them in this particular instance. (See Art. XXIV.)

It should be added, in order to avoid all possibility of misconception upon the subject, that although the nests figured are presented as nearly as possible of natural size, I cannot affirm, nor do I believe, that the parts represented, or either of them, are portions of one and the same nest; but simply that, from a number of nests extracted, the top of one, and the bottoms of two, are here produced, the originals of which I have also brought for inspection at the present meeting.

In closing this communication I may observe, that it is recorded of a species of mining spider mentioned in Brown's History of Jamaica (page 420, *Tarantula*, No. 2), that its nests are constructed with a double doorway; the second valve, however, appearing in this case to have been at the top, and placed in conjunction with the ordinary one, so as to have had but one hinge in common. Brown also gives a figure of the nest (Tab. 44, fig. 3, and 3--6) with, to use his own words, "both its *valves*, which are so well contrived, and so strongly cemented, that whenever they are forced open, the native elasticity of the ligaments that fix them, restore them immediately to their usual position." Another nest, mentioned by Olivier (*Encyclop. Méth.* vol. i. (?) page 230),

as being found in Guadaloupe, is stated to have two valves of unequal size, playing in like manner upon a single hinge, the larger one taking its rise from the hinder part of the smaller, and being so adapted that it would seem to cover this latter as well as the margin of the orifice itself. Baron Walckenaer, alluding to these nests, in his remarks under the head of *M. nidulans*, in the "Suites à Buffon," infers, that the insect by which they were constructed was probably different from the ordinary species observed at Jamaica, of whose economy some further details have recently been laid before this Society by Mr. Sells. At all events the description of Olivier so strongly coincides with the appearances presented by Brown's figure, that there can be little hesitation, I think, in referring them to the same species. The length of the nests also appears to correspond, Brown's figure measuring  $4\frac{3}{4}$  inches, and not  $3\frac{1}{2}$ , as through some inadvertence stated by Baron Walckenaer.

On my return to the Mediterranean, I hope to have further opportunities of observing the habits of the *Mygale Ionica*, and perhaps of detecting the insect in the act of building, which may enable me hereafter to lay before the Society some additional particulars connected with the construction of these ingenious retreats.

The accompanying figures upon Plate IX., for which I am indebted to the kindness of Mr. W. W. Saunders, exhibit—

1. The insect, of natural size.
  2. The eyes.
  3. External view of right mandible, magnified.
  4. Internal view of ditto.
  5. Hooked process of ditto, apart.  
with *a*, the small hole from which the poison is supposed to issue.
  6. Portion of fore leg, magnified.
  7. Portion of hind leg, magnified.
  8. Bicuspidate process of tarsus, with claws.
  9. Upper portion of nest, with lid partly open (side view).
  10. Ditto ditto (front view).
  11. Longitudinal section of ditto, and of operculum.
  12. Lower portion of nest, with smaller valve open.
  13. The same (side view).
  14. Lower portion of another nest reversed, the valve closed.
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